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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,766	11/25/2003	Marco Viti	856063.749	4188

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EXAMINER
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HORN, ROBERT WAYNE

ART UNIT	PAPER NUMBER
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2837

DATE MAILED: 05/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/721,766

Applicant(s)

VITI, MARCO

Examiner

Robert W. Horn

Art Unit

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13, 15, 16 and 18-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13, 15, 16 and 18-22 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-9 is/are rejected.
- 7) ☒ Claim(s) 5 and 10-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/27/2006.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

The examiner acknowledges receipt of amendments, dated 3/27/2006. The amendments are proper, in that they place claims previously denied in condition for allowance. The examiner acknowledges claims 13, 15, 18, and 22 have been amended, and claims 17, 23, and 24 have been cancelled.

The examiner also acknowledges an information disclosure statement citing Cohen et al. (U.S. Patent 5,672,948). Upon review of the subject matter of Cohen et al., the examiner has determined that it reads on previously allowed claims. The indicated allowability of claims 1-4 and 6-9 is withdrawn in view of the newly discovered reference to Cohen et al. Rejections based on the newly cited reference follow.

The finality of the action 10/25/2005 is respectfully withdrawn to provide the applicant the opportunity to reply to the new rejections. A new non-final rejection follows.

### ***Response to Arguments***

Applicant's arguments, see Remarks, filed 3/27/2006, with respect to the rejection(s) of claim(s) 13, 15, 18, and 22 under 35 USC § 102 and 35 USC § 103 have been fully considered and are persuasive. Therefore, the rejections of claims 13, 15, 18 and 22 have been withdrawn.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, and 6-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Cohen et al. (U.S. Patent 5,672,948).

As regards claim 1, Cohen et al. discloses a method for detecting the angular position of a brushless electric motor, of the type in which the emission of a polarity signal of the back electromotive force by a detection circuitry associated with the motor is provided, comprising:

detecting a polarity signal of a back electromotive force from a winding of the motor using a detection circuit (back EMF commutation state, abstract; column 6, lines 2-15); and

using a bi-directional counter to count a difference in residence time of logic states '0' and '1' at an output of said detection circuitry (figure 3A, Up/Down Counter, up on '0', down on '1', count 110 is the difference in residence time, column 6, lines 11-14).

As regards claim 2, Cohen et al. discloses the use of a digital up/down counter (abstract, line 1) that is enabled around an expected zero-crossing of the back electromotive force (figure 3C, position 60) with a counting window having an arbitrary duration (changes, column 8, lines 17-36).

As regards claim 3, Cohen et al. discloses the method according to claim 2 wherein said counting window has an arbitrary duration, symmetrical with respect to the expected zero-crossing (figure 3A, counting window 60-120, symmetrical about expected zero-crossing position, 112).

As regards claim 4, if the counting window has an arbitrary duration, it is the same as saying the counting window varies arbitrarily during the driving of the motor.

Claim 4 is rejected on the same basis as claim 2.

As regards claim 6, which is dependent on claim 2, which is dependent on claim 1, Cohen et al. discloses a counter that is periodically disabled from counting (column 5, lines 6-9; does not count, disabled, column 6, line 15; shown in relation to figures 3A-3C).

As regards to claim 7, which is dependent on claim 1, Cohen et al. discloses a counter wherein an increase in the counter takes place with the reception at the input of the counter of a logic state '0' (column 6, lines 1-7), whereas a decrease takes place together with a reception at the input of a logic state '1' (column 6, lines 7-11; figure 3A to 3C, Up/Down Counter, position 60-120).

As regards to claim 8, Cohen et al. discloses the method according to claim 7 wherein a counting frequency of the counter can vary during various driving phases of the motor (column 3, line 21).

As regards to claim 9, Cohen et al. discloses the method according to claim 1 wherein a value assumed by the counter at an end of each counting window is used in formulas to estimate an instantaneous position of the rotor, a period between two zero-crossings (column 8, lines 16-35), and a speed of rotation (column 3, lines 28-33). The means responsive to counter means for ascertaining, for ascertaining the final count (period), for adjusting the frequency of initiation of the commutation states (speed) when a non-zero count is ascertained for synchronizing the field coil and rotor (instantaneous

position), disclosed by Cohen et al. is general enough to read on the language of claim 9.

***Allowable Subject Matter***

Claims 5, 10-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 13, 15-16, and 18-22 allowed.

The following is an examiner's statement of reasons for allowance:

Claim 13 is found allowable for all the steps of the method, but especially the step, establishing a true point of zero crossing based upon a count of the counter at the end of the selected time period.

Claim 15 is found allowable for all the steps of the method, but especially the step, estimating a point of zero crossing of the back electromotive force.

Claim 21 is found allowable for all the steps of the method, but especially:

estimating a point of zero crossing of a back electromotive force of a winding of a motor; and

establishing a true point of zero crossing based on a value of the counter at the end of the time period.

Claim 22 is found allowable for all components of the system, but especially:

a position detector module configured to estimate a point of zero crossing of the back electromotive force, and to determine a true position of a rotor of

the motor based upon a count of the counter module at an end of a selected time period; and

an enable module configured to select the time period such that the estimated zero crossing occurs at a midpoint of the time period, and to enable the counter module during the same period.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

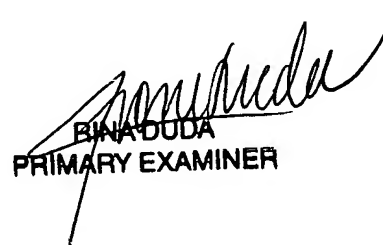
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert W. Horn whose telephone number is 571-272-8591. The examiner can normally be reached on Monday-Friday 7:00-3:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A. Bradley can be reached on 571-272-2800, ext 33. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

rwh  
April 10, 2006

  
BINAY DUDA  
PRIMARY EXAMINER